



GERG

Young Researcher's Prize

Nov 25, 2015



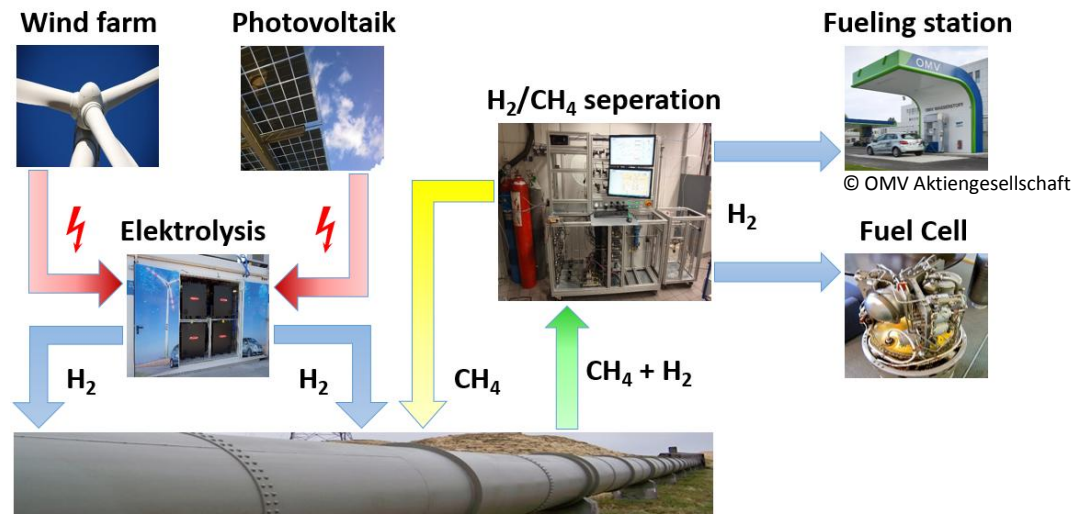
Markus Groß

Cost-efficient transportation of green hydrogen and extraction at arbitrary locations

GERG
Young Researcher's Prize

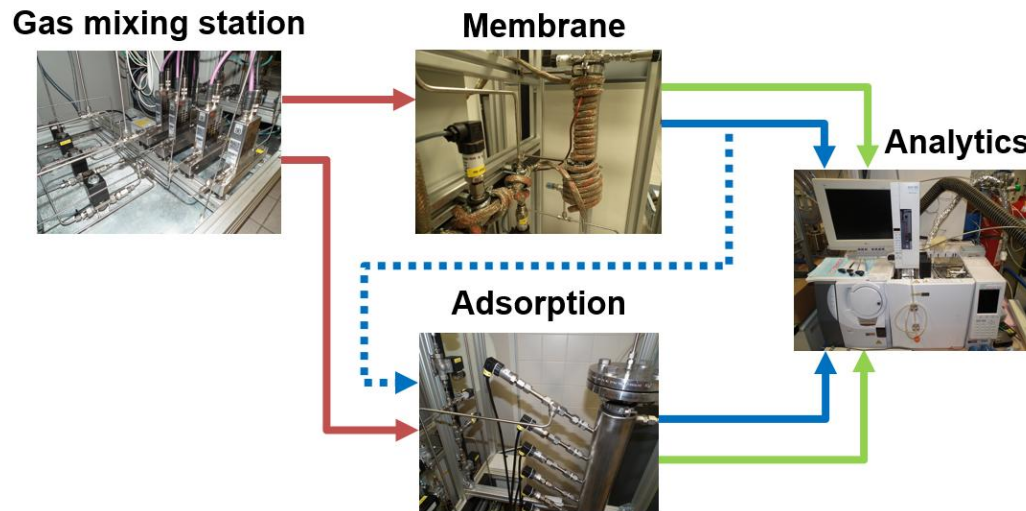
Slide 1 - Motivation

- Development of Power-to-Gas concepts
- Fluctuating electrical energy sources
- Natural gas grid (storage and transportation)
- Hydrogen gas extraction process



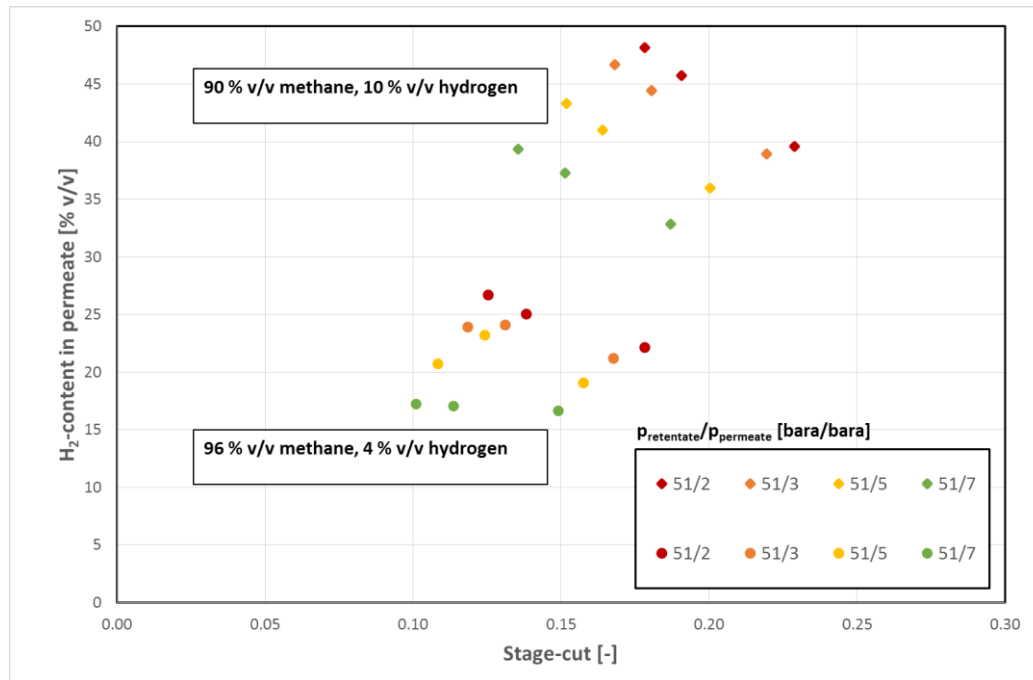
Slide 2 – Methodology

- Pre-concentration with permeation
- Pressure Swing Adsorption (PSA)
- Analytics (multi gas analyser, MS, GC-MS)
- Highly flexible (especially regarding pressure)



Slide 3 – First results

- Membrane process
 - Pure gases
 - Methane/Hydrogen gas mixtures



Slide 4 – Outlook

- Membrane process
 - CO₂/CH₄/H₂ gas mixtures
 - Real gas mixtures
- Adsorption
 - Breakthrough curves
 - Pure gases, gas mixtures, real gas mixtures
- Process simulation
 - Characterization
 - Optimization towards maximum energy efficiency



Thank you for your attention

